

## Patent Abstracts of Japan

PUBLICATION NUMBER : JP10255830  
 PUBLICATION DATE : 25-09-98  
 APPLICATION NUMBER : JP970059190  
 APPLICATION DATE : 13-03-97

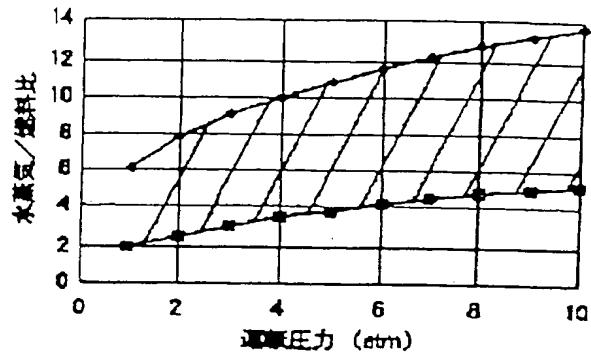
VOL: 98 NO: 14 (-)  
 AB. DATE : 31-12-1998 PAT: A 10255830  
 PATENTEE : TOSHIBA CORP  
 PATENT DATE: 25-09-1998

INVENTOR : OGAWA HAKARU;  
 HORI MICHIO;  
 NAKAGAKI TAKAO;  
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 SASAKI MASAKUNI;  
 FUKUDA MASAFUMI

INT. CL. : H01M8/06

TITLE : OPERATING METHOD FOR FUEL CELL

ABSTRACT : PROBLEM TO BE SOLVED: To provide a method wherein deposition of carbon can be suppressed and a fuel cell can be operated for a long time stably, when methanol, ethanol or dimethyl ether is supplied as its fuel to a fuel electrode of the fuel cell.  
 SOLUTION: A fuel cell contains electrolyte, a fuel electrode and an oxidizer electrode to put the electrolyte mentioned above between, and an operating temperature is set at 550-750 deg.C. In this case, a mol mixing rate for water and fuel is set for, (1) When fuel containing methanol is used,  $0.250+0.287 P-1.08 \times 10^{-2} \leq S/C \leq 1.994+0.724P-2.96 \times 10^{-2}$ , (2) When fuel containing ethanol or dimethyl ether is used,  $1.500+0.574P-2.15 \times 10^{-2} \leq S/C \leq 4.993+1.451P-5.96 \times 10^{-2}$ , (In the above, P is an operating pressure for each fuel cell (atm)), and the fuel is supplied to the fuel electrode of this fuel cell.



Y, X

XP-002107520

P.D. .... 1998 .....  
P. ....        = 2

CA COPYRIGHT 1999 ACS  
AN 129:233126 CA  
TI Method for operating \*\*\*fuel\*\*\* \*\*\*cells\*\*\*  
DT Patent  
IN Ogawa, Hakaru; Hori, Michio; Nakagaki, Takao; Murata, Keiji; Sasaki,  
Masakuni; Fukuda, Masafumi  
PA Toshiba Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10255830	A2	19980925	JP 97-59190	19970313

PI 1998

PY AB \*\*\*Fuel\*\*\* \*\*\*cells\*\*\* having an electrolyte between a cathode and an anode and an operation temp. of 550-750 degree. are operated by using a MeOH-water mixt fuel, having a MeOH/H<sub>2</sub>O mol ratio between (0.250 +0.287P -1.08x10-2P<sup>2</sup>) and (1.994 +0.724P -2.96x10-2P<sup>2</sup>), where P is the operational pressure of the cells in atm. The \*\*\*fuel\*\*\* \*\*\*cells\*\*\* may also us EtOH-H<sub>2</sub>O or Me<sub>2</sub>O-H<sub>2</sub>O fuel mixts with a EtOH/H<sub>2</sub>O or Me<sub>2</sub>O/H<sub>2</sub>O mol ratio between (1.500 + 0.574P -2.15x10-2P<sup>2</sup>) and (4.993 +1.451P - 5.96x10-2P<sup>2</sup>).

# EUROPEAN PATENT OFFICE

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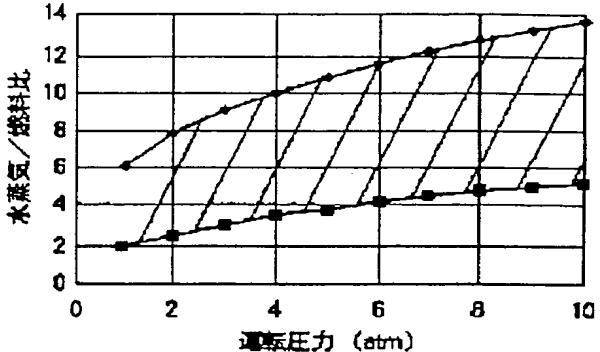
APPLICATION DATE : 13-03-97  
 APPLICATION NUMBER : 09059190

APPLICANT : TOSHIBA CORP;

INVENTOR : FUKUDA MASAFUMI;

INT.CL. : H01M 8/06

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# XP-002107545

1/1 - (C) WPI / DERWENT  
AN - 98-574080 ç49!  
AP - JP970059190 970313  
PR - JP970059190 970313  
TI - Operating method of fused carbonate fuel battery -  
involves using specific ratio of mixture of steam and  
carbon by mixing water and methanol at operating  
pressure of fuel battery so that specific relation is  
satisfied  
IW - OPERATE METHOD FUSE CARBONATE FUEL BATTERY SPECIFIC  
RATIO MIXTURE STEAM CARBON MIX WATER METHANOL OPERATE  
PRESSURE FUEL BATTERY SO SPECIFIC RELATED SATISFY  
PA - (TOKE ) TOSHIBA KK  
PN - JP10255830 A 980925 DW9849 H01M8/06 005pp  
ORD - 1998-09-25  
IC - H01M8/06  
FS - EPI  
DC - X16  
AB - J10255830 The method involves operating the battery at  
a high temperature of 550-750 deg. C. The battery  
contains the electrolyte sandwiched between the fuel  
pole and an oxidising air pole. Methanol is employed as  
the fuel. The molar mixing ratios of steam and carbon  
(S/C) of water and methanol contained in the fuel is  
 $0.250+0.287P-1.08 \times 10^{-2}P^2 = S/C = 1.994 + 0.724P - 2.96 \times 10^{-2}P^2$  where P' is the operating pressure of the fuel  
battery in atmosphere. The fuel of the mix ratio is  
supplied to the fuel pole.  
- ADVANTAGE - Enables use of methanol, ethanol or  
dimethyl ether as fuel. Enables to suppress carbon  
precipitate. Provides stable operation of fuel battery  
for long period of time.  
- (Dwg. 1/2)